

Amendments to the Claims

This listing of claims will replace all prior versions, and listings of claims in the application.

Listing of Claims:

1. (currently amended): A method of treating a substrate material or film present on the material surface comprising repeatedly performing an etching process cycle, wherein each etching process cycle increases a depth of an etched feature in the material or film, and wherein each etching process cycle includes performing the following sequential steps:

(a) etching the material or film to increase the depth of the etched feature;
(b) depositing or forming a passivation layer on the surfaces of the etched feature; and

(c) partially and selectively removing the passivation layer from the surfaces of the etched feature in order that the etching of subsequent etching process cycles proceeds in a direction substantially perpendicular to the material or film surface,

wherein at least one of steps (a) or (b) is performed in the absence of a plasma, and wherein step (c) of each cycle is performed separately ~~and distinctly~~ from step (a) of each next cycle ~~steps (a) and (b)~~.

2. (original): A method according to claim 1, wherein step (a) is performed with one or more appropriate chemicals in the absence of a plasma.

3. (previously presented): A method according to claim 1, wherein the other of steps (a) and (b) is performed in the presence of a plasma.

4. (previously presented): A method according to claim 1, wherein the material surface has previously had a mask pattern defined thereon.

5. (previously presented): A method according to claim 1, wherein the material or film is a dielectric.

6. (original): A method according to Claim 5, wherein the material or film is an oxide, preferably of silicon, quartz, glass, pyrex, SiO₂ deposited by CVD, or SiO₂ grown by thermal, plasma or other means to deposit or grow the oxide.

7. (previously presented): A method according to claim 1, wherein the material or film is etched with HF.

8. (previously presented): A method according to Claim 1, wherein H₂O and/or an alcohol is present in step (a).

9. (previously presented): A method according to claim 1, wherein the material or film is a semiconductor, preferably a Si, SiGe or Ge semiconductor.

10. (previously presented): A method according to Claim 9, wherein the material or film is etched with HF, HNO₃ and CH₃COOH, or with a halogen containing compound, preferably an inter-halogen gas comprising halogen components only.

11. (previously presented): A method according to claim 1, wherein the material or film is a conductor, preferably an Au or Pt conductor.

12. (original): A method according to Claim 11, wherein the material or film is etched using aqua regia.

13. (previously presented): A method according to Claim 1, wherein N₂ or other inert gas is present in step (a) and/or is used as a purging gas between the steps of the method.

14. (previously presented): A method according to Claim 1, wherein the passivation layer is formed on a surface that is resistant to chemical etch.

15. (previously presented): A method according to Claim 1, wherein the passivation layer is deposited using a polymer.

16. (currently amended): A method according to Claim 15, wherein the polymer is a per-fluoro polymer of formula $n(C_xF_y)$, where x and y are suitable values.

17. (original): A method according to Claim 1, wherein, when a plasma is not present in step (b), a photo-enhanced polymerization process is used in the deposition of the passivation layer.

18. (original): A method according to Claim 1, wherein the selective removal of the passivation layer is carried out by surface irradiation.

19. (original): A method according to Claim 18, wherein the irradiation is thermal heating of either the front and/or the rear surface of the material or film to provide thermolytic decomposition, or is provided by a light source of the front of the material or film resulting in photolytic decomposition, or wherein the irradiation source is an excimer laser.

20. (original): A method according to Claim 18, wherein the irradiation is directional or collimated parallel to the direction of etch front propagation.

21. (original): A method according to Claim 21, wherein the surface irradiation is a plasma, wherein the ion energy in the plasma is preferably greater than 10eV.

22. (original): A method according to Claim 21, wherein the plasma comprises a precursor gas or mixture of precursor gases.

23. (original): A method according to Claim 22, wherein the precursor gas comprises an inert gas which is capable of physically removing the passivation layer and/or a gas which is capable of physically removing the passivation layer with chemical enhancement.

24. (original): A method according to Claim 22, wherein the precursor gas comprises an etchant chemical used in step (a) or a material used for depositing the passivation layer in step (b).

25. (original): A method according to Claim 1, wherein any gases employed are delivered from a point of use delivery system positioned locally to a chamber within which the method is performed.

26. (currently amended): A method according to Claim 1 for treating a substrate material or film formed from metallic and magnetic materials, wherein the ~~process~~ etching step (a) is operated at pressures above atmosphere and/or at elevated temperatures using as etchant materials any one or more of diketones, ketoimines, halogenated-carboxylic acid, acetic acid, and formic acid chemistries and extensions including hexafluoro-2,4-pentanedione and other fluorinated acetyl-acetone groups.

Claims 27-38 (cancelled).